

Editorial

What is pain management, and what is its relevance to the rheumatologist?

Introduction

A predominant symptom common to most rheumatological conditions is musculoskeletal pain, and providing excellence in the diagnosis and treatment of painful inflammatory joint and connective tissue diseases probably represented a major motivating factor behind many individuals' decision to become rheumatologists. Despite such aspirations, many rheumatological referrals are in respect of patients whose musculoskeletal pain is not due to inflammatory disease. Furthermore, as 'benign' non-inflammatory musculoskeletal pain cannot usually be prioritized as urgent, most patients will have become chronic pain (i.e. >3 months) sufferers by the time of their first hospital appointment. How rheumatologists view the chronic pain aspects of individual patients may vary greatly. Most feel comfortable dealing with chronic pain where this has an inflammatory cause, for example in rheumatoid arthritis (RA) sufferers with whom they may feel great empathy. In contrast, many rheumatologists feel uncomfortable dealing with chronic pain where the cause is unclear, as in mechanical low back pain (LBP). Here, therapeutic responses are predictably disappointing, and rheumatologists may have difficulty empathizing with such patients, particularly as their problems may appear to be predominantly psychological. For their part, such patients not only expect that proposed treatments be effective, but that they are sympathetically delivered. These mutual misunderstandings may explain the difficulties often experienced by rheumatologists during these 'heart sink' patients' clinic visits. Drawing on our experience of a multidisciplinary pain management centre, we elaborate here an argument for a change in how chronic, non-inflammatory musculoskeletal pain patients should be viewed, to effect better outcomes. We use chronic LBP as a vehicle to illustrate our arguments, but the principles discussed would apply to other musculoskeletal pain problems, such as fibromyalgia.

So, what is pain management, and what is its relevance to the rheumatologist?

The time-honoured processes of history taking, examination and investigation are undertaken in the belief that confirmation of diagnosis will secure best

outcome, through diagnosis-specific treatment. This systematic approach is unsatisfactory in chronic mechanical LBP, and for a number of reasons. Appropriate investigations, including multiple and complex radiology, may be normal. Even if investigations pinpoint lesions thought capable of causing chronic symptoms, such as degenerative disc disease, pain manipulations through physical, pharmaceutical and alternative therapies have usually already been tried, and their usefulness limited by lack of efficacy or side-effects. Whether opiates should be used here is an unresolved debate, but dose escalation clearly represents a potential hazard. Chronic LBP patients thus have symptoms that are neither amenable to cure nor fully suppressible by analgesia, and although attending doctors' heart sink emotions are understandable, they can also lead to nihilism and thereby increase the risks of iatrogenic distress induction (see later). To minimize such risks when dealing with these difficult patients a robust alternative strategy is required, and we commend here the pain management approach.

In this and many other pain centres, the initial phase of pain management is the gathering of information prior to patients' first visit, through self-report screening questionnaires regarding patients' understanding of their symptomatology, together with standardized psychometric measures of depression, pain-related fear/anxiety, disability and general quality of life. This facilitates subsequent triage whereby the collated biomedical, functional and psychosocial indicators inform decisions regarding clinical priority and likely assessment pathway, such as physician only, physician with psychologist, etc. An important function of the first visit is to exclude a previously missed treatable cause for the pain, for example supposed radicular leg pain which is actually due to a previously unsuspected osteoarthritic hip. Such a finding would be treated accordingly. Although the biomedical process appears similar to routine medical practice, there is, from a pain management perspective, an appreciation that information provision itself is unlikely to change inappropriate beliefs or behaviours. Thus, from this juncture, the pain management approach diverges from routine clinical practice. This will typically include addressing any misunderstandings about the cause of patients' pain and, if indicated, their suboptimal management of their life with pain. Assuming that no curable diagnosis is present, a more detailed assessment of biopsychosocial factors follows and, after a short

interdisciplinary case conference, the patient is given feedback regarding the clinical formulation. Given that patients' beliefs will influence decision-making and subsequent behaviour, it is important to check that they have not misunderstood any technical information provided, or focused selectively on only part of the relevant message before interdisciplinary intervention is planned.

To be successful the pain management approach requires patients and their physicians to realize their respective predicaments. Thus, patients must understand and accept that their pain is not curable, while physicians including rheumatologists must deliver this unwelcome news to patients, but do so carefully and sensitively, and with a view to dispelling their misconceptions and providing guidance as to the way out of their impasse. Following such communication, patients should understand that the 'bottom line' of the pain management approach is not abolition of pain, but a retention or restoration of function, despite their pain. Before progress can be made, patients must also appreciate that activity-related pain does not equate to activity-related tissue damage, i.e. it is safe for them to reintroduce physical activity into their lives. Patients are often very fearful of inducing damage and pain, so they must start physical reactivation at very low intensities. Once commenced, however, activity can be incrementally increased to reinforce the message that pain does not mean harm, and some patients can make remarkable progress. Patients also need to understand that they have developed psychological features that are common and understandable secondary sequelae of living with chronic pain, but that these features must be tackled openly to facilitate behavioural changes likely to effect functional improvements.

Significant disability is not inevitable with chronic benign pain; but the greater the number of obstacles present, the greater the potential for maladaptive secondary psychological responses [1]. Helping patients to understand the counterproductive influence of ineffectual coping responses is a necessary strategy in the therapeutic change process. Research confirms the potency of misplaced beliefs, attitudes and feared expectations as barriers to change, and as a strong motivational factor in avoidance behaviour [2, 3]. Amongst chronic pain patients, perhaps the most clinically important cognitive presentation is the tendency to become preoccupied with beliefs and expectations that are catastrophic in nature (e.g. rapid and progressive pathology, loss of independent living, vulnerability to structural damage, cancer, marital breakdown, suicide). The fact that patients' families often share biomedical misattributions, and may act as advocates for caution, also inhibits adaptive behaviour [4]. Education and attitude change must therefore also address the concerns of influential family members. Ultimately, the promotion of a change towards adaptive health-care behaviour is the shared responsibility of patients, their families and medical practitioners. The ability to motivate change towards

adaptive health-care behaviour thus appears an important component of rheumatological clinical excellence [1]. In order to become advocates of the pain management approach, clinicians including rheumatologists require an understanding of research upon which the approach has evolved.

Physiology of pain

That inflammation and pain follow acute tissue injury is well accepted, but understanding pain report is fraught with conceptual difficulties. Report of pain is a communication of the perceptual experience of nociception resulting from the interaction of biomechanical, biochemical and neurophysiological factors. These are, in turn, influenced by cognitive and behavioural (i.e. psychological) factors, including prior experience, beliefs about pain and illness, coping style and strategies, peer dynamics and socio-economic factors. Even the 'normal' painful state is characterized by a prolonged experience of pain following brief stimulation, in the lowering of pain threshold (allodynia), the magnified response to noxious stimulation (hyperalgesia), and the spread of pain and hyperalgesia in non-dermatomal distributions and in uninjured tissue (referred pain and secondary hyperalgesia). Presentation at the acute stage is characterized by a reduction in physical activity in association with verbal and facial expressions of pain and medication-taking, which are considered normal and acceptable ramifications of acute suffering [5]. These behaviours normally reverse as tissue injury is rectified and inflammation and 'normal' pain settle.

Chronic nociceptive pain could arise through chronic tissue inflammation, as in RA, while chronic neuropathic pain could arise through chronic nerve damage, as in diabetic peripheral neuropathy. However, persistent pain, following an injury that has healed, is not explainable by peripheral biochemical or neurological activations. Research reviews on pain mechanisms note that chronic inflammatory pain sensitizes central nervous system (CNS) pathways, leading to stimulation of chemical, functional and structural changes that 'prime the pain processing system' [6]. This is achieved by lowering the thresholds of pain-sensing neurons, and a concomitant release of growth factors and neurotransmitters, which reinforce the genesis and transmission of pain messages. Increasing effort has been made to understand the potential contribution of such central neural plasticity in the maintenance of pain responses. Examples include referred pain and secondary hyperalgesia at the site of previous injuries (leading to hypothesized 'neural pain memory'), phantom pain and the spread of CNS receptive fields following limb amputation (as reviewed by Coderre *et al.* [7]).

It is only quite recently that medical education has abandoned the Cartesian model of pain, which implies that if no organic cause is found for pain, it must be

psychogenic. The layperson cannot be blamed for medical ignorance, but medical practitioners acting on this belief may contribute to patients' distress, by inadvertently giving the impression of disbelieving the sincerity and/or severity of patients' symptoms, and thus implying that their pain is not real. Understanding the mechanisms underlying the development of chronic pain from acute pain is vital if the potentially harmful effects of assigning the 'psychogenic' label are to be avoided.

Recent research has shown that ongoing pain is explainable in the absence of ongoing inflammation. The normal intervertebral disc has little innervation, thus making it an unlikely culprit for causing chronic mechanical LBP. It has now been shown, however, that neovascularization into the disc occurs as part of the degenerative process, and this is accompanied by ingrowth of nociceptive neural structures [8]. This finding may explain how a previously insensitive structure could become capable of giving rise to pain. Individuals suffering chronic degenerative LBP would, unless otherwise instructed, follow their evolutionary instincts to rest. If no resolution of LBP occurs despite continued or even intensified rest, it is easy to see how previously normal, sensible individuals could become embroiled in this vicious circle, and thus develop chronic LBP and associated disability. It is not clear, however, why only some individuals with degenerative LBP are thus affected.

The transition from acute to chronic LBP

It has been estimated that 90% of 'first time' LBP cases remit naturally within around 4 weeks [9]. More recent research suggests, however, that a greater proportion of LBP patients have mild ongoing, or recurrent acute, symptoms [10], and those developing chronic symptoms have undergone closer scrutiny. Of 117 LBP patients followed from onset to 6 months, 40% continued to suffer pain at 6 months [11]. This 40% rated their acute LBP as more intense and of a more aversive sensory and affective quality, they scored higher on depression and anxiety questionnaires, they were more avoidant of activity and suffered greater consequences. The primary feature that usually distinguishes acute from chronic pain patients is that, in the latter, the ongoing pain problem cannot be causally related to an active inflammatory or structurally damaging process. Following acute injury, and guided by the prescription of 'common sense' advice to 'take it easy' or to 'let pain be your guide', patients may fail to mobilize normally. Burdened by fear that increased pain signifies increased tissue damage and bodily harm, such individuals become increasingly activity-avoidant, and progressive physical deconditioning inevitably follows, in concert with increasing social and psychological dysfunction.

If this process does not resolve, a history of repeat specialist consultations and unhelpful medical or

surgical interventions may unfold. Patients' growing dissatisfaction with health-care professionals may culminate in conflict and hostility with each 'failed' treatment or communication. Further attempts to control pain by escalating the amount and/or potency of analgesics are usually ineffectual. At best, initially helpful analgesics become unhelpful over time, and give rise to central side-effects including sedation and mood change. Patients become passive and helpless, and illness behaviour may be exaggerated in an effort to convince others of the reality of their pain. When family and friends lose patience, conflict may follow. Subsequent loss of social and occupational responsibilities and status, combined with social withdrawal, heralds profound demoralization and resentment, and occasionally clinical depression. The most badly affected patients are effectively 'prisoners of pain', and it is vital that rheumatologists appreciate the importance of their potential role in this downward spiral.

When faced with a stressor as aversive as chronic pain, it is understandable that some patients become unable to maintain adaptive coping strategies, and that even robust individuals may eventually exhibit psychological distress. If patients perceive consultations to be unsympathetic or dismissive, they understandably become angry and frustrated with all health-care professionals with whom they come into contact. These latter considerations illustrate the iatrogenic component of patients' overall psychological distress. If the iatrogenic component is to be avoided, the non-iatrogenic components of distress must be regarded as understandable, and secondary to the adverse situation in which patients find themselves. It is also important to understand that once psychological distress has developed, it and the associated physical deconditioning conspire to maintain a vicious circle that lowers pain thresholds and thus amplifies the level of perceived pain (see Fig. 1).

In recognition of the importance of psychological aspects in the development of chronic pain from acute pain, a series of recent articles [12–15] has highlighted a number of relevant factors, including fear of pain (and consequent activity avoidance), maladaptive coping strategies (e.g. catastrophizing), somatic anxiety and depression, the impact of acute pain on disability in terms of health-care utilization, and the physical, social and occupational consequences of the pain. These considerations highlight the need for psychological assessment and intervention. Indeed the New Zealand government now require GPs to screen LBP patients for psychosocial 'yellow flags' at the earliest opportunity (i.e. from around 4 weeks post-onset) to identify individuals at high risk for developing pain-related disability following back injury [16]. In the UK, the Clinical Standards and Advisory Group [17] and The Royal College of General Practitioners [18], have made similar recommendations. Much of the advice on appropriate early self-management of LBP is contained in a patient booklet called 'The back book' [19]. These

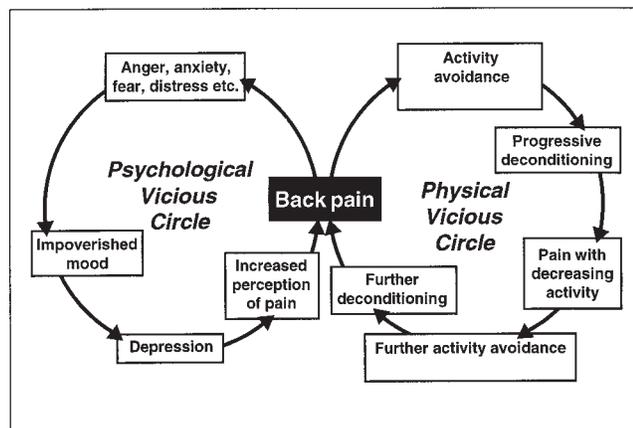


FIG. 1. The theoretical vicious 'circle' leading to the development of chronic LBP-associated disability. This figure can be used during patient education, and to facilitate understanding during discussions, we often break the circle down into physical and psychological components, although clearly these are interactive. Any potential concurrent psychological stressor, including the iatrogenic component, will exert its effects in concert with pain-related distress.

guidelines, and issues relating to their implementation, are reviewed in Waddell [20].

The busy clinician, struggling to manage an already demanding caseload may, understandably, be reluctant to spend more time with patients in identifying and dealing with medically related psychosocial issues. Indeed there are political and economic sanctions in place for not meeting government targets and patients' expectations. The adoption of preventative health-care strategies is pertinent to clinicians and managers at all levels of the health-care service and extends beyond a 'quantity versus quality' issue. Therefore, the argument against expediency and in favour of facilitating doctor-patient communication can, in our experience, reduce return visits and improve medication compliance and appropriate use of health-care services generally.

The management of complex cases by interdisciplinary pain centres

For highly distressed and disabled patients, referral to a multidisciplinary pain centre may be indicated, since the ability of any individual clinician to effect change may be limited. The majority of these patients will accept interdisciplinary pain management, delivered on an individual and/or group-based training programme that provides skills based upon a cognitive-behavioural self-management approach. The rationale behind, and mechanisms of delivery of, pain management programmes are described in detail elsewhere [21]. Briefly, improvements in function and negative affect, together with alteration of negative appraisal (e.g. catastrophic expectations) and passive coping are brought about by multifaceted skills training. This usually includes

sessions on education about biomechanics and neurophysiology, drug reduction, increasing strength and flexibility, pacing of activities, setting of personally relevant goals, cognitive-behavioural techniques for changing maladaptive behaviours and unhelpful thoughts and beliefs, relaxation, sleep management, problem solving skills and the role of the family in promoting adaptive behaviours.

Meta-analysis of outcome following multidisciplinary interventions [22] indicates that, compared with unprofessional care, there is a significant reduction in medication use (65 vs 21%, respectively), health-care use (35 vs 4%) and pain behaviour (62 vs 0%), an increased proportion of return to work (68 vs 36%) and physical function improvements (53 vs 13%). A more recent meta-analysis of randomized controlled trials of cognitive-behavioural therapy confirms the efficacy of these approaches [23]. Studies considered in both of these meta-analyses have demonstrated significant improvements not just for LBP patients, but also for those with RA, osteoarthritis, fibromyalgia and neurogenic pain. One UK pain centre has shown that neither medical nor demographic factors (age, gender, chronicity, site of pain, attributed cause of pain, number of surgeries for pain, history of pain-related litigation, disability-based income or previous psychiatric or psychological treatment for non-pain conditions) influenced treatment outcome [24]. Return to work following sickness certification is an important outcome of pain management intervention. According to Waddell [20], the accumulated evidence predicts that the probability of failure to return to work following absenteeism for LBP increases from 20% at 1 month to 50% at 6 months, and up to 100% at 2 yr. Our experience [25] of running only a brief, vocational pain management intervention for a group of chronic LBP sufferers who had been out of work for a mean of nearly 3 yr demonstrated a return to work on the open job market in about 50% of cases!

Summary

When confronted with patients whose pain is becoming more chronic and disabling, GPs and hospital physicians alike must recognize the risks of maladaptive psychosocial factors, and especially their own potential for inducing iatrogenic distress. Chronic symptoms without discernible cause, or where the cause is not amenable to a curative approach, is the rule rather than the exception in chronic LBP. Indeed, even in inflammatory diseases such as RA, the degree of disability may be disproportionate to the degree of damage or disease activity. When thorough medical examinations and investigations are normal, or demonstrate incurable causes for chronic pain, it should not be assumed that the sufferers are imagining their symptoms or seeking gain. Secondary psychological distress is predictable, and could be minimized by

accurate and honest early communication. Correcting patients' misattributions about intractable pain, and addressing misplaced fears of activity-related tissue damage, is a necessary first step in the therapeutic process. In this respect, the pain management approach, used early on in a patient's pain career, could potentially pre-empt the development of chronic pain-related disability. However, this hypothesis has yet to be formally tested. Pain management is not the same as pharmacological pain manipulation, although the latter may form an essential element of the former. Other rheumatological skills are logically used alongside pain management, for example steroid injections in LBP patients who develop trochanteric bursitis. An understanding of the mechanisms leading to chronic pain, and an acquisition of pain management skills, would allow rheumatologists to deal with chronic, benign musculoskeletal pain patients in a more sympathetic, relaxed and confident manner, and gain increased job satisfaction through reductions in distressing heart sink emotions. Fewer review appointments, more rapid discharge rates and improved health-care utilization may ultimately offset concerns about the increases in initial consultation time. Specialist interdisciplinary teams will still be needed for the more complex cases, which currently consume so much health-care and welfare resource.

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References

- Booker CJ, Cooper RG. The rheumatologist's role in facilitating adaptive self-management of chronic pain. *Acta Rheumol Port* 2002;27:7-19.
- Jensen MP, Romano JM, Turner JA *et al.* Patient beliefs predict patient functioning: further support for a cognitive-behavioural model of chronic pain. *Pain* 1999;81:95-104.
- Arnstein P, Caudill M, Mandle CL *et al.* Self-efficacy as a mediator of the relationship between pain intensity, disability and depression in chronic pain patients. *Pain* 1999;80:483-91.
- Romano JM, Turner JA, Friedman LS *et al.* Observational assessment of chronic pain patient-spouse behavioural interactions. *Behav Ther* 1991;22:549-67.
- Philips HC, Grant L. Acute back pain: a psychological analysis. *Behav Res Ther* 1991;29:429-34.
- Hopkin K. Show me where it hurts: tracing the pathways of pain. *J NIH Res* 1997;9:37-43.
- Coderre TJ, Katz J, Vaccarino AL, Melzack R. Contribution of central neuroplasticity to pathological pain: review of clinical and experimental evidence. *Pain* 1993;52:259-85.
- Freemont AJ, Peacock TE, Goupille P *et al.* Nerve ingrowth into diseased intervertebral discs in chronic back pain. *Lancet* 1997;350:178-81.
- Nachemson A. The natural course of low back pain. In: White AA, Gordon SL, eds. *Symposium on idiopathic low back pain*. St. Louis, MO: Mosby, 1982:46-51.
- Croft P, Papageorgiou A, McNally R. Low back pain. In: Stevens A, Rafferty J, eds. *Healthcare needs assessment, 2nd series*. Oxford: Radcliffe Medical Press, 1997:129-82.
- Philips HC, Grant L. The evolution of chronic back pain problems: a longitudinal study. *Behav Res Ther* 1991;29:435-41.
- Dworkin RH. Toward a clearer specification of acute risk factors and chronic pain outcomes. *Pain Forum* 1997;6:148-50.
- Atkinson JH, Slater MA, Epping-Jordan JE. Identifying individuals at risk of chronicity: an opportunity to re-examine our treatment, timing and targets. *Pain Forum* 1997;6:137-9.
- Katz J. Pain begets pain: predictors of long-term phantom limb pain and post-thoracotomy pain. *Pain Forum* 1997;6:140-4.
- Linton S. Overlooked and underrated? The role of acute pain intensity in the development of chronic back pain problems. *Pain Forum* 1997;6:145-7.
- Kendall NAS, Linton S, Main CJ. Guide to assessing psychosocial yellow flags in acute low back pain: risk factors for long-term disability and work loss. Wellington, NZ: Accident Rehabilitation & Compensation Insurance corporation of New Zealand and the National Health Committee, 1-22. (email: nhc@MOHWN.synet.net.nz or internet: <http://www.nhc.govt.nz>), 1997.
- CSAG 1994 Report on back pain. London: Clinical Standards Advisory Group, HMSO.
- RCGP 1996 Clinical guidelines for the management of acute low back pain. London: Royal College of General Practitioners.
- Roland M, Waddell G, Moffett JK, Burton K, Main C, Cantrell T. *The back book*. London: The Stationery Office, 1996.
- Waddell G. *The back pain revolution*. Edinburgh: Churchill Livingstone, 1998.
- Main CJ, Spanswick CC, eds. *Pain management: an interdisciplinary approach*. Edinburgh: Churchill Livingstone, 2000.
- Flor H, Fydrich T, Turk DC. Efficacy of multidisciplinary pain treatment centers: a meta-analytic review. *Pain* 1992;49:221-30.
- Morley S, Eccleston C, Williams A. Systematic review and meta-analysis of randomised controlled trials of cognitive behaviour therapy and behaviour therapy for chronic pain in adults, excluding headache. *Pain* 1999;80:1-13.
- Williams AC de C., Richardson PH, Nicholaoas MK *et al.* Inpatient vs. outpatient pain management: results of a randomised controlled trial. *Pain* 1996;66:13-22.
- Watson PJ. From back pain to work. Report prepared for the Department of Employment's National Disability Development Initiative, 2001.